

ABSTRACT OF THE DISCLOSURE

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A piezo-electric transformer circuit incorporates a piezo-electric transformer comprising a multi-element primary region and a single element secondary region mutually joined together. In operation, the circuit applies a drive signal to the primary region to excite the primary and secondary regions into longitudinal resonance, thereby generating a high potential signal at the secondary region. The drive signal is derived from the signal at the secondary region in a self-oscillating feedback loop configuration. The transformer is fabricated from a hard piezo-electric ceramic material having a dielectric loss of substantially 0.005 or less at 1 kHz. Although such a hard ceramic does not provide as high a charge coefficient as softer piezo-electric ceramic materials, it is found that hard ceramics provide surprisingly improved energy conversion when used in piezo-electric transformer power supplies.